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EPA 2002-06-26 1138902/EP-A1 **Method and apparatus for timed measurement of the voltage across a device in the charging circuit of a piezoelectric element**

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A method and apparatus for timed measurement of a

voltage across a device in a charging circuit of piezoelectric element. The voltage across the device is sensed and read at a predefined time in synchronization with an injection event of the at least one piezoelectric actuator. The device may be the piezoelectric element or a buffer capacitor.

**EXEMPLARY CLAIMS-** A method for timed measurement of a voltage across a device in a charging circuit of at least one piezoelectric element,; characterized in that; the voltage across the device is sensed; and; the sensed voltage is read at a predefined time in synchronization with an injection event of the at least one piezoelectric element.; The method as recited in claim 1,; the device is the at least one piezoelectric element.; The method as recited in claim 1,; the device is a buffer capacitor.; The method as recited in claim 1,; the predefined time is a predefined time offset before or after a respective charging or discharging action of the injection event.; The method as recited in claim 4,; the respective charging or discharging action is started in response to a respective strobe pulse, the predefined time offset being in relation to the respective strobe pulse.; The method as recited in claim 5,; the predefined time is coincident with the respective strobe pulse, the respective charging or discharging action being started a second predefined time offset following the respective strobe pulse.; The method as recited in claims 1 or 3,; characterized in thatthe read voltage is used for at least one of:; determining an energy loss or power dissipation factor of the at least one piezoelectric actuator;; determining a capacitance of the at least one piezoelectric actuator;; diagnosing a capacitance of the buffer capacitor and/or associated circuitry; and; regulating a voltage gradient across the device.; The method as recited in one of the claims 1 through 6,; the read voltage is used to correct a charging or discharging of the at least one piezoelectric element, in particular for aging phenomena and/or temperature effects.; The method as recited in one of the claims 1 through 6,; the read voltage is used for a diagnosis of at least one of the at least one piezoelectric element and/or at least one injector associated with the at least one piezoelectric element.

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